

DATA SHEET

cAI04

ABB Ability™ Symphony® Plus Hardware Selector



The cAlO4 Compact Analog Input module processes up to 8 TC and mV, group isolated, input field signals. Each channel is independently configurable. FC 221 (I/O Device Definition) sets Al module operating parameters and each input channel is configured using FC 222 (Analog Input CH) to set indivdual input channel parameters such as engineering units, High/Low alarm limits, etc.

A/D resolution of each channel is 16 bits with polarity. The cAl04 module has 2 A/D converters, each serving 4 input channels. The module will update 8 input channels in 300 msecs.

The cAI04 module is automatically calibrated, hence there is no need for manual calibration. Cold Junction Compensation is configurable and can use the RTD embedde in the module mounting base, an external RTD connected to TB3 of module base, or a separate application input configured by the user.

Features and benefits

- 16 independently configurable channels supporting:
- TC types: E, J, K, R, S, T, B, L, N (14 & 28 AWG), U
- Chinese TC types: E & S
- mV Ranges: 0 to 100 mV or -100 to +100 mV
- 16-Bit (with polarity) A/D resolutionV
- A/D update of all 8 Channels in 300 msecs
- Accuracy is ±0.05 % of Full Scale Range where FSR = 200 mV

General info		
Article number	2VAA008414R1	
Туре	Compact Analog Input	
Signal specification	TC Type: E, J, K, R, S, T, B, L, N (14 or 28 AWG), U, Chinese E or S mV Ranges: -100/0 to +100 mV	
Life cycle status	ACTIVE	
Number of channels	8	
Signal type	mV/TC	
HART	No	
SOE	No	
Redundancy	No	
Form factor	Compact (127 mm)	
Mounting	Horizontal Row or Vertical Column	
MTBF (per MIL-HDBK-217-FN2)	PR A: 327,498 Hours	
MTTR (Hours)	1 Hours	

Detailed data		
Module power requirements	24 VDC ± 10%, 65 mA typical, 73 mA max	
Module power connection	POWER TB on cHBX01L or VBX01T	
Overvoltage category	Category I for power, inputs or outputs. Tested according to EN 61010-1	
Max field cable length	600 meters (1968 feet)	
Number of Channels	8 Analog Input Channels	
Signal ranges and types	Analog Inputs: mV: -100/0+100mV Thermocouple: Type B, E, J, K, L, N(14 or 28 AWG), R, S, T, U or Chinese E, S	
TC Cold Junction Compensation	Configurable: 1) Embedded RTD in the mounting base 2) External RTD connected to TB3 of mounting base, or 3) Separate application input	
A/D Conversion	2 A/D converters, each with 4 input channels	
A/D Resolution	16-Bits with Polarity	
A/D Update rate	300 msec for all 8 CH	
Accuracy, FSR	±0.05% of FSR, FSR = 200 mV	
Field signal to Logic isolation	Galvanically isolated, 1500 V up to 1 minute	
Channel isolation	1x8 group isolated, 1500 V up to 1 minute	
Open circuit detection time	Less than 5 seconds	
Normal mode noise rejection	-70 dB minimum	
Common mode noise rejection	-90 dB minimum	
DC common mode rejection	-90 dB minimum	

Diagnostics	
Front plate LED's	STATUS LEDs: R (Run) and F (Fault) + 1 thru 8
Local availability	Mini USB connection on module front plate
Remote availability	HN800 device diagnostics via SPE

Environment and certification	
Temperature, Operating	-40 to +70 °C Tested according to IEC/EN 60068-2-1, IEC/EN 60068-2-2
Temperature, Storage	-40 to +85 °C Tested according to MIL-STD-810G
Relative humidity	20% to 95% @ 40°C non-condensing. Tested according to IEC/EN 60068-2-78, IEC/EN 61298-3
Vibration (operational sinusoidal)	5 to 60 Hz 0.137 mm (0.0054 in.), 60 to 150 Hz 1.0 G. Tested according to IEC/EN 60068-2-6
Vibration (transportation)	10 to 500 Hz. Tested according to MIL-STD-810G
Shock (storage)	15 G, 11 msec. Tested according to IEC/EN 60068-2-27
Drop	100 mm. Tested according to IEC/EN 60068-2-31
Protection class	IP20 according to EN 60529, IEC 529
Altitude (operational)	Sea level to 3,048 meters (10,000 ft.) Tested according to MIL-STD-810G
Altitude (storage)	Sea level to 12,192 meters (40,000 ft.) Tested according to MIL-STD-810G
Air quality	ISA S71.04 G1, ISA S71.04 G3 compliant versions SPCxxxA are also available
ESD immunity	Tested according to IEC/EN 61000-6-2, IEC/EN 61000-4-2, Severity level 3
Surge immunity	Tested according to IEC/EN 61000-6-2, IEC/EN 61000-4-5, Severity level 3
Electrical fast transient immunity	Tested according to IEC/EN 61000-6-2, IEC/EN 61000-4-4, Severity level 3
Radiated RFI immunity	Tested according to IEC/EN 61000-6-2, IEC/EN 61000-4-3, Severity level 3
Conducted Immunity	Tested according to IEC/EN 61000-6-2, IEC/EN 61000-4-6, Severity level 3
Magnetic field immunity	Tested according to IEC/EN 61000-6-2, IEC/EN 61000-4-8, Severity level 4
Radiated emission	Tested according to IEC/EN 61000-6-4, CISPR 11 + A1, CISPR 16-1-1, Group 1, Class A, ISM equipmentording to IEC/EN 61000-6-2, IEC/EN 61000-4-6, Severity level 3
Conducted emission	Tested according to IEC/EN 61000-6-4, CISPR 11 + A1, CISPR 16-1-1, Group 1, Class A, ISM equipment
Voltage dips and interruption immunity	Tested according to IEC/EN 61000-6-2, IEC/EN 61000-4-11
CSA non-hazardous locations	Certified for use as process control equipment in an ordinary (non-hazardous) location
CSA hazardous, nonincendive locations	Class I, Division 2, Groups A, B, C, D
CE Mark	CE Mark EMC directive 2004/108/EC & Low Voltage Directive 2006/95/EC
RoHS compliance	RoHS Directive 2015/863
WEEE compliance	DIRECTIVE/2012/19/EU

Compatibility		
Use with MTU	cHBS01-CJC, cVBS01-CJC	
Module keying code for base	slot #1 = 10, slot #2 = 17	

Dimensions		
Width	27 mm	
Depth	106 mm	
Height	127 mm	
Weight	168 g	



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